REMARKS

This Amendment is filed in response to the Office Action of October 15, 2009. The amendment filed July 9, 2009 is repeated above without change. The remarks which follow are changed to address the obviousness rejection which was inadvertently omitted in the amendment filed July 9, 2009.

I. Amended claims

The following amendments have been performed in the claims:

- All independent claims 1, 45, 46, 64, 69 and 70 have been redrafted based on the feature of original claims 19 and 34.
- The dependent claims have been amended accordingly.
- New dependent claims 71-74 have been added based on original claim 3.

II. Subject-matter of the present invention

The present invention, as expressed by the amended independent claims, relates to conveying parameters for broadcast/multicast sessions via communication protocol. A repair type parameter that is indicative of a point-to-multipoint repair session, a point-to-point repair session or both is received. The repair session is requestable by at least one receiver that did not correctly receive data sent to a plurality of receivers in a transmission session, wherein in the repair session, at least a part of the data sent to the plurality of receivers in the transmission session is sent at least to the at least one receiver requesting the repair session. Data is then received in the repair session as indicated by the repair type parameter.

Being able to select among different kinds of repair sessions – i.e. point-to-multipoint repair sessions, point-to-point repair sessions or both – and communicating this specific kind of repair session to receivers via a repair type parameter is particularly useful at least for the following reasons:

- In case of many receivers suffering from data corruption during the broadcast/multicast transmission session, re-transmission of the corrupted data in a single point-to-multipoint repair session may be more efficient than having a plurality of point-to-point repair sessions. Nevertheless, if there are only one or few receivers suffering from data corruption, having dedicated point-to-point repair sessions may

allow tailoring the re-transmitted data to the respective needs of the receivers, which may result in an overall reduced amount of data that has to be re-transmitted (i.e. the single receivers only receive that data that they actually require).

- Signalling that a point-to-multipoint repair session will take place may prevent further receivers that did not correctly receive the multicast data and did not yet send a request for a repair session from sending this request for a repair session, thus contributing to reduce network congestion by a plurality of repair requests.

III. Prior art

RFC 2327 - SDP: Session Description Protocol, April 1998 (*Handley et al.*)

This document defines the SDP. SDP is intended for describing multimedia sessions for the purposes of session announcement, session invitation, and other forms of multimedia session initiation.

US 2004/0078624 (*Maxemchuk et al.*)

Maxemchuk et al. relates to a system and method for the repair of IP multicast sessions. A network includes a source of multicast packets in a multicast session and a plurality of multicast recipients. The repair server provides the packets it receives to the recipients. The repair server includes a missing packet detector. There is a plurality of retransmit servers in the network buffering portions of the packets they respectively receive during the session. The repair server maintains an ordered list of the retransmit servers that are most likely to have buffered copies of packets missing from the session. When the repair server detects that there are packets missing from the session it received, it uses the ordered list to sequentially request the missing packets from respective ones of the plurality of retransmit servers (see the abstract and paragraphs [0010-0015]).

US 2003/0120802 A1 *(Kohno et al.)*

Kohno relates to a data communication system, in which the function of automatic repeat request is provided for transmission of packets based on a data communication protocol such as the Real-Time Transport Protocol or the User Datagram Protocol. Lost packets are detected at various timings, for example, when the beginning packet of each frame is received, the final frame of each frame is received, at a time limit of processing, and at a regular interval, and retransmission requests are issued accordingly. A data reception terminal does not issue a retransmission request if associated retransmission data will not be in time for playing with

consideration of processing time and roundtrip time, thereby avoiding the transmission of useless retransmission request packets and retransmission packets.

"Optimally selecting the parameters of adaptive backoff algorithms for computer networks and multiprocessors" by Peter B. Danzig *(Danzig)*

In his dissertation, *Danzig* relates to a multiple round multicast algorithm. Thereby, the sender chooses a round's timeout based on the number of outstanding responses of the recipients of the multicast, its buffer service time distribution, and a criterion that the multicast completes by the last round. The sender calculates a backoff value, which is transmitted to the recipients of the multicast and which can be used by the recipients to randomly delay their responses. If the sender fails to receive all of the responses of the recipients before the calculated timeout, it may need to retransmit the multicast. Once it is accepted that retransmissions are inevitable and explicitly chosen to transmit more than once, this procedure may significantly reduce a multicast's total latency.

IV. Novelty and non-obviousness of the amended independent claims

1. In the Office Action of January 1, 2009, the Examiner argues that the subject-matter of the independent claims is rendered obvious by *Khono* in view of *Danzig*. Irrespective whether this finding is true, it is respectfully submitted that the subject-matter of the presently amended independent claims is novel and non-obvious over *Khono* and *Danzig*.

Firstly, *Khono* clearly relates to a system where data, for instance motion data, is transferred from one sender terminal to one receiver terminal (e.g. see paragraph [0067]: the sender terminal to the receiver terminal) and, if transmitted data is corrupted, a retransmission of the data may be initiated. Thus, *Khono* may only be considered to disclose an advanced automatic repeat request (ARQ) function for a point-to-point transmission session. Thereby, if necessary, data is retransmitted in a point-to-point repair session.

Since *Khono* does neither disclose a point-to-multipoint transmission session nor a point-to-multipoint repair session nor a repair type parameter, the subject matter of the amended independent claims is novel with respect to *Khono*, and it is also not apparent how *Khono* should render the subject-matter of the amended independent claims obvious (particularly, the transmission of a repair type parameter that is indicative of a point-to-multipoint repair

session, a point-to-point repair session, or both and the transmission of data in the repair session as indicated by the repair type parameter).

Secondly, *Danzig* may be considered to disclose a multicast is transmitted from a sender to a plurality of receivers (see page 54, section 3.8: we propose a multiple round multicast algorithm), and that the multicast can be re-transmitted (in a kind of repair session, see page 13, first paragraph). *Danzig* however fails to disclose that the repair session can be point-to-point, point-to-multipoint or both, and that a repair type parameter is transmitted that indicates the specific type of the present repair session (point-to-point, point-to-multipoint or both).

Furthermore, *Danzig* obviously only discloses a communication system where a receiver has to positively acknowledge the successful reception of transmitted data (ACK), whereas the present invention is based on negative acknowledgments (NACKs), as reflected by the claim feature that "a repair session is requestable by at least one receiver that did not correctly receive data". In other words, the amended independent claims require a receiver to actively request a repair session (for instance by sending a NACK), wherein in Danzig, only failure to receive ACKs from all receivers within a specific period of time leads to a repair session taking place.

Thus, the subject-matter of the amended independent claims is also clearly novel and non-obvious with respect to *Danzig*.

2. In the Office Action of January 23, 2008, section 9 on p. 28, the Examiner considers the subject-matter of original claim 34 to be rendered obvious by a combination of SDP and *Maxemchuk*. It appears that this finding is based on the Examiner's assertion that the ordered list of retransmit servers maintained at the repair server would disclose as repair type parameter.

This view has to be respectfully contested.

Maxemchuk may be considered to disclose that data packets are transmitter from a sender to a plurality of receivers, and to disclose presence of a repair server. However, in *Maxemchuk*, the receivers can select by means of different multicast addresses if they want to take part in a standard session, in which data packets are provided by a multicast source without repair

functionality, or a repair session, in which the data packets also stem from the multicast source, but are provided via the repair server that automatically tries to obtain lost packets from a plurality of retransmit servers and to provide them to the plurality of receivers (see paragraph [0013]). The repair server thus improves the multicast data transmission as a network supplied service, and neither the source nor the receivers see any change (see paragraph [0012]).

Maxemchuk thus already fails to disclose that a repair session is requestable by at least one receiver that did not correctly receive data sent to a plurality of receivers in a transmission session, as required by the amended independent claims. In *Maxemchuk*, a receiver can take part in either an "unrepaired multicast session" or a "repaired multicast session" (see paragraph [0013]), whereas in case of the latter option, the repair session is not after the actual transmission session, but in parallel, i.e. to enhance the transmission session.

Maxemchuk further entirely fails to disclose point-to-point repair sessions. Both the "unrepaired multicast session" and the "repaired multicast session" are always described as multicast sessions.

And finally, *Maxemchuk* also fails to disclose a repair type parameter that indicates a point-to-multipoint repair session, a point-to-point repair session, or both. This is already caused by the lack of disclosure of a point-to-point repair session. Furthermore, there is not even a parameter that would indicate a point-to-multipoint repair session alone, and in particular no such parameter that would be transmitted to the receivers.

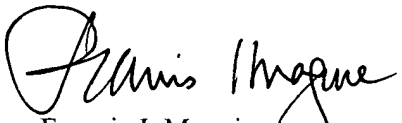
It is thus apparent that the amended independent claims are novel and non-obvious with respect to *Maxemchuk*.

3. Applicants admitted prior art (AAPA) does not relate to repair sessions at all, and, hence, neither a point-to-point repair session nor a point-to-multipoint repair session nor a repair type parameter indicating the type of the repair session is disclosed therein. Thus, the amended independent claims are novel and non-obvious with respect to AAPA.

4. Lastly, it is also not apparent how a combination of the cited prior art should render the subject-matter of the amended independent claims obvious, since the prior art already entirely

fails to disclose that it is advantageous to be able to switch between point-to-multipoint and point-to-point repair sessions.

Respectfully submitted,



Francis J. Maguire
Attorney for the Applicant
Registration No. 31,391

FJM/mo
WARE, FRESSOLA, VAN DER SLUYS
& ADOLPHSON LLP
755 Main Street, P.O. Box 224
Monroe, Connecticut 06468
(203) 261-1234